

WebQuests: Tools for Differentiation

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The Net-Generation has arrived! . . . Eighty million strong, the youngest of these kids are still in diapers, and the eldest are just turning twenty. . . . What makes this generation different from all others before it? It is the first to grow up surrounded by digital media. Computers can be found in the home, school, factory, and office and digital technologies such as cameras, video games, and CD-ROMs are commonplace. Increasingly, these new media are connected by the Internet, an expanding web of networks which is attracting a million new users monthly. Today's kids are so bathed in bits that they think it's all part of the natural landscape. To them, the digital technology is no more intimidating than a VCR or toaster. . . . Boomers stand back. Already these kids are learning, playing, communicating, working and creating communities very differently than their parents. They are a force for social transformation. (Tapscott, 1998, pp. 1–2)

For most students, especially those who are intellectually and creatively gifted, a classroom without technology

can be a painful exercise of recitation—go to the encyclopedia, write down the relevant facts, and organize the facts into a paper—or memorization—listen, take notes, and retrieve the information for an end of the unit test. Although note-taking, research, and writing are highly relevant skills, gifted students excel at pushing those boundaries and attacking learning from a different angle.

Enter the WebQuest. Bernie Dodge, one of the creators of the WebQuest model, defines a WebQuest as “an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet” (Dodge, 1995, ¶ 2). Simply put, WebQuests, when properly constructed, are activities, usually authentic in nature, that require the student to use Internet-based resources to deepen their understanding and stretch their thinking around just about any topic imaginable. Usually, the content chosen is related to the regular curriculum and is perfect for situations in which the teacher wants “to help students use newly acquired knowledge to construct meaning on a complex topic” (March, 2000, p. 55). For gifted children, this perfect blend allows the student to go beyond the bounds of normal classroom instruction

by examining the core curriculum in greater depth. "It's preferable," March adds, "that students do this in a way that fosters cooperative work and [tests] ideas in a real world context (p. 55)."

Differentiation

Used as a tool for differentiation, WebQuests can be a powerful supplement to a teacher's toolbox, or an exciting replacement for an otherwise lifeless project. "The WebQuest assignment adheres to the philosophy of differentiated instruction in that it gives students, particularly gifted students, an opportunity to make choices based on ability and interests, and individual motivation to learn," notes Waukesha, WI, gifted and talented resource teacher Cheryl Bender.

In her book, *The Differentiated Classroom: Responding to the Needs of All Learners*, Carol Ann Tomlinson (1999) cited a number of principles that should guide a differentiated classroom, including the three traditional areas of modification: content, process, and product. *Content* refers to what the teacher wants the student to learn, *process* "describes activities designed to ensure that students use key skills to make sense out of essential ideas and information," and *product* refers to the "vehicles through which students demonstrate and extend what they have learned" (Tomlinson, p. 11). WebQuests can address any (or all) of these three modification areas in a single stroke. Furthermore, WebQuests can be useful tools for differentiating for *all* students—not just gifted students (Kelly, 2000).

For example, one middle school teacher (Nielsen, 2004) designed a WebQuest to help students learn about the battle of Gettysburg through

The screenshot shows a WebQuest page titled "El Niño or El No-no" with a navigation bar containing links: Home, Task, Process, Conclusion, Content Standards, and Credits. The page is divided into several sections:

- Introduction:** A paragraph explaining that students will act as weather forecasters, using a map of the Pacific Ocean to track El Niño and La Niña. It mentions that El Niño is a warm event and La Niña is a cold event, both affecting weather patterns.
- YOUR TASK:** A section where students are assigned to be part of an expert team, responsible for collecting data, organizing it into a graphic form, and analyzing it for the purpose of making weather predictions in their community. It also mentions that students will write a speculation paper about the future of the weather.
- THE PROCESS:** A section describing a seven-step approach to completing the project. It starts with learning about El Niño and La Niña, then gathering data and building a model. The final step is to write a speculation paper about the future of the weather.
- Step 1: In the news:** A section where students are asked to read two articles about El Niño and La Niña, and to write a short summary of each one.

There are two small images: one of a satellite in space and another of a map of the Pacific Ocean showing the equator and the regions of El Niño and La Niña.

Figure 1. El Niño or El No-No

the eyes of those involved (<http://www.pls.uni.edu/nielsen/Gettysburg/gettysburg.html>). The teacher strengthened content knowledge by providing Internet resources for students to research and gain insights into the lives of citizens and soldiers in and around Gettysburg in 1863. Then, students transformed that knowledge into an authentic creation—in this case, a journal written from the perspective of a soldier, reporter, resident, or someone else. This product required students to develop a deep understanding, not just of the events of the battle of Gettysburg, but of the surrounding culture and times in order to replicate a journal that was truly authentic.

At the high school level, WebQuests are just as useful, but delve even deeper into curriculum. One high school teacher (Nuthall, 2001) spun a discussion of El Niño and La Niña into a WebQuest integrating meteorology, geography, current events, and mathematics (<http://www.powayschools.com/projects/elniño>; see Figure 1).

Students use measurements and the findings of other scientists to "craft an effective speculation paper." In this example, students synthesize the scientific hypotheses of others with the collection of real data from the Pacific Ocean to complete a highly authentic task. Again, not only does this project require deep understanding of the content, but an appreciation of the type of writing required of scientists.

WebQuests also address another important element of diversified instruction—assessment. Tomlinson (1999) wrote that assessment has "more to do with helping students grow than with cataloging their mistakes" (p. 11). WebQuests, through the use of detailed scoring guides or rubrics, enable students to check their progress throughout their work. In addition, WebQuests teach students accountability for their work because students are provided assessment guidelines from the very beginning. Gifted students, in particular, benefit from the advantages of self-assessment by requiring them to proofread and review their work—teaching them a valuable life skill—as well as encouraging them to thoughtfully reflect on their work both during the course and at the completion of their project.

Finally, WebQuests use technology in a practical and student-centered way to provide differentiation opportunities. Although many teachers still struggle to find meaningful ways to effectively use computers in the classroom (Dooling, 2000), WebQuests offer students an authentic way to synthesize information gathered from the Internet. Because technology is well-known for its motivating features (Bergen, 2001), combining the use of technology with an open-ended, real-world task that engages students in higher level thinking skills can't help but result in a recipe for learning.

The Critical Components of a WebQuest

WebQuests are relatively easy to design, frequently following the same five components in any successful lesson plan: Introduction, Task, Process, Evaluation, and Conclusion. Some teachers choose to separate the hyperlinks they select for their students into a separate section called resources, while others include their hyperlinks in the process section. Using these five components helps a teacher organize the WebQuest in a way that students find logical and easy to navigate.

Introduction

The first important step of any lesson is the Introduction. Just as in a typical lesson, teachers use the Introduction of a WebQuest to create interest in the upcoming lesson. For example, as an Introduction to a WebQuest on cloning, students are told that they have been chosen as scientists to speak to the United Nations. In this case, the Introduction (as shown in Figure 2; Kossow, n.d.) creates interest for the students and gives them a glimpse into their upcoming project. In a different WebQuest, students are charged with the task of presenting information on a foreign country to travel agents, with the Introduction providing students with the basic framework for the project in addition to creating interest by including photographs of exotic and interesting places. Besides an intriguing Introduction, the teacher connects the WebQuest to the background knowledge of the student—ideally something recently learned from the curriculum. Although students will be drawn in naturally through the use of technology, writing a strong Introduction sets the stage for a successful and enjoyable learning experience.

Task

The next component of a WebQuest is the Task, although some teachers refer to it as the Problem (Kelly, 2000). In the Task, which Dodge (2005) calls the most critical step, students are exposed to a specific, open-ended activity and their role in that activity is discussed. Critical skills that the WebQuest will assess might also be included. It is critical that the Task features an activity that is “doable” and realistic, as well as something to which the students can relate. In order to stress higher level thinking skills, it is also imperative that the Task not be solvable through a single, simple solution; quality WebQuests are

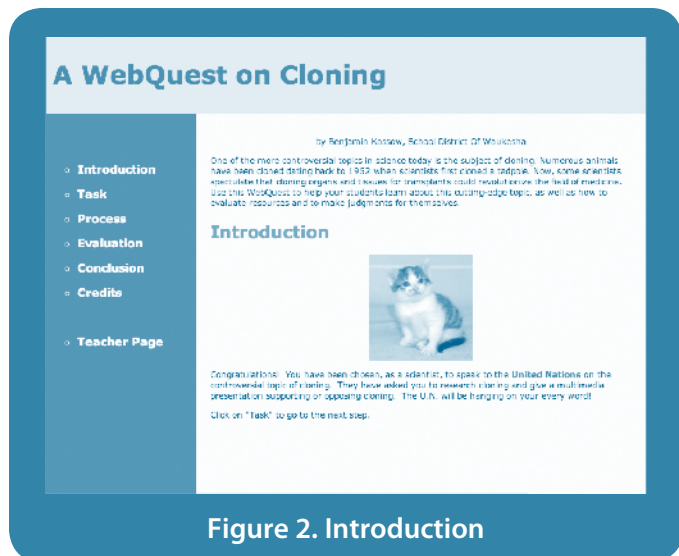


Figure 2. Introduction

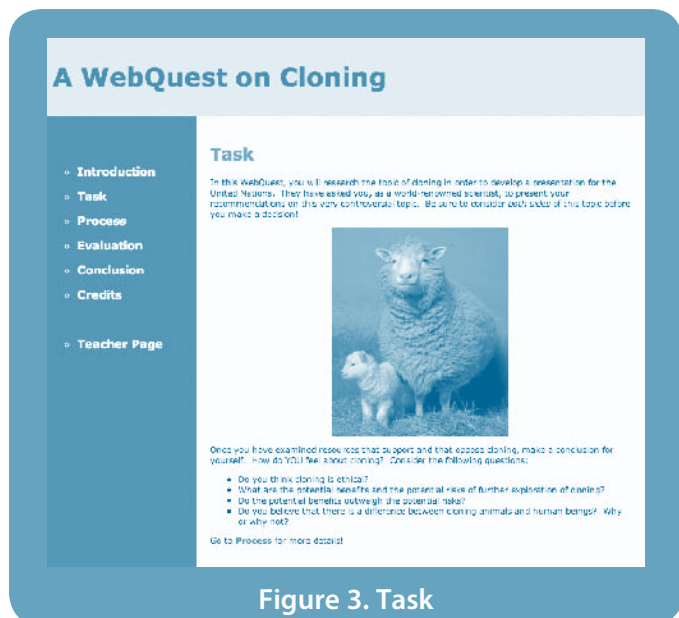


Figure 3. Task

not scavenger hunts or fill-in-the-blank tasks. The description of the Task should be short and concise, as the next section will dig more deeply into the steps necessary for completing the Task.

One example of a successful Task, shown in Figure 3, comes from a WebQuest on cloning (Kossow, n.d.). Students researched the topic of cloning and developed a multimedia presentation for the United Nations, in this case, their peers, which urged support or opposition for the controversial scientific advancement. Students used Internet resources to learn about cloning and used several questions to guide their work, such as “Do you think cloning is ethical?” and “What are the potential benefits and the potential risks of further exploration of cloning?” Including questions, while not necessary in every

WebQuest, is helpful when students encounter topics that are at the edge of their learning.

Process

The next step is Process, which Dodge (2005) suggests is the component most like a traditional lesson plan. Paired with the resources, most teachers will devote more time to the Process section than any other. A successful Process, as illustrated in Figure 4 (Kossov, n.d.), will clearly outline the steps a student must complete. Each of these steps should be described thoroughly and completely. In this section, the teacher should give additional background material necessary for completing the task. The Process should also begin to describe basic assessment criteria and teacher expectations for the final product. The teacher should describe, in detail, the qualities by which the product will be judged. Although a WebQuest is intended to be an open-ended activity, it is imperative that teachers set boundaries in the Process stage so students know what will be expected of them, what is off-limits, and just how creative they are allowed to be.

More and more teachers are including the lists of hyperlinks students need to complete the task in the Process section, as well. Although originally considered a separate section, the examination and evaluation of resources adds an important part of the Process. The use of Web sites is a critical feature of any WebQuest, and particularly useful to the development of gifted children. The simple use of Web sites helps teachers differentiate the depth and content of different lessons (Besnoy, 2006). Web sites also help gifted children “learn how to research information, compare it to prior knowledge, and create new ideas” (Besnoy, p. 30). Paired with an open-ended, meaningful task in a WebQuest, the use of Web sites becomes a powerful tool for teaching gifted children.

There are a number of considerations a teacher should make when compiling lists of resources for a WebQuest. First, the teacher should select links carefully based on grade level and expertise of the students. Web sites should be screened for content within the site itself, as well as links to other Web sites the original site might contain. Second, the teacher should present the hyperlinks in an easily accessible format, preferably as a simple link rather than forcing students to type out the entire URL. In addition, the teacher might provide a short description of where the students will go. This allows students to make quick judgments about the resources they will choose to explore. Finally, once the WebQuest is completed, the hyperlinks should be checked on a reg-

A WebQuest on Cloning

Process

1.) First, use websites from the list below to learn about cloning. After you have used some of the websites listed below, use some of the search engines listed to find other websites that discuss cloning. Take notes from these websites about information you think will be important for your presentation.

As you examine these websites, think about what YOUR opinion of cloning is. Keep in mind the questions that you read in the "Task" section.

Also, keep a list of the websites you use. Write down the URL (address) of each site you visit and get information from. You will need to turn this information in to your teacher at the end of your presentation.

Cloning Websites:

- World Book Encyclopedia
- Ology: All About Cloning
- I Can Do That!
- TFC: Copy Cat
- TFC: A Real Copy Cat
- Cloning Fact Sheet

Search Engines:

- Yahoo! (gens)
- Google
- Ask Jeeves
- KidsClick!
- AOL at School
- Wikipedia

2.) Next, considering all the data you have collected, decide if you support or oppose the continued study of cloning. Be sure that you have solid reasons for your choice.

3.) Then, choose which pieces of data you collected will be the most effective in supporting your conclusion. You will integrate these pieces of information into your presentation. You should also consider data that opposes your point-of-view and find information that will address this. Read persuasive presentation articles covering viewpoints.

4.) After you have decided which data you will use, you will begin preparing your 3-5 minute multimedia presentation. You can use PowerPoint, HyperStudio, or some other multimedia program. Carefully decide how you will incorporate your multimedia into your persuasive presentation.

5.) Finally, PRACTICE your presentation -- to your friends, your family, your guinea pig... whoever. Be sure that you work on polishing your presentation carefully.

Consider the following things:

- Eye contact -- be sure to look at the audience as much as possible
- Tone -- vary your tone from time to time so you are not speaking the same way the entire time
- Pace -- don't speak too fast or too slow
- Volume -- make sure everyone can hear you

The more you practice these things, the better your presentation will be.

Figure 4. Process

ular basis to ensure that they are working properly and the content that remains is what was originally intended. Nothing is more frustrating to the creator or participant of a WebQuest than dealing with broken links or changed Web sites.

Evaluation

Another critical component of a WebQuest is the Evaluation section. The Evaluation should closely reflect the elements of the project outlined in both the Task and Process. Most WebQuests use a scoring guide or rubric to help students understand the qualities the assessor will look for in grading their work. As shown in Figure 5 (Kossov, n.d.), WebQuest scoring guides take a number of forms, from elaborate grids outlining specific criteria for different qualities of the product, to simple checklists delineating what a final product must include. Ideally, the scoring guide will be objective and feature as many measurable items as possible, leaving few items to question. Whatever form is used, a successful Evaluation allows students to judge for themselves the quality of their own work and moves the accountability for grading from the teacher, a process that can be nebulous and secretive, to the student empowering them during the learning process.

A WebQuest on Cloning					
<ul style="list-style-type: none"> Introduction Task Process Evaluation Conclusion Credits Teacher Page 	Evaluation				
		Minimal 1	Basic 2	Proficient 3	Advanced 4
	Research	Student research report shows the correct use of all sources and includes all relevant information.	Student research report shows the correct use of all sources and includes all relevant information.	Student research report shows the correct use of all sources and includes all relevant information.	Student research report shows the correct use of all sources and includes all relevant information.
	Persuasive Techniques: stated Conclusion	Student did not state a clear conclusion.	Student did not state a clear conclusion.	Student did not state a clear conclusion.	Student did not state a clear conclusion.
	Persuasive Techniques: Addressing the Audience	Student did not address the audience.	Student did not address the audience.	Student did not address the audience.	Student did not address the audience.
	Persuasive Techniques: Acknowledging and Refuting the Opposition	Student did not acknowledge or refute the opposition.	Student did not acknowledge or refute the opposition.	Student did not acknowledge or refute the opposition.	Student did not acknowledge or refute the opposition.
	Speaking skills	Student did not use appropriate speaking skills.	Student did not use appropriate speaking skills.	Student did not use appropriate speaking skills.	Student did not use appropriate speaking skills.
	Multimedia presentation	Student did not use multimedia presentation.	Student did not use multimedia presentation.	Student did not use multimedia presentation.	Student did not use multimedia presentation.

Figure 5. Evaluation


A WebQuest on Cloning	
<ul style="list-style-type: none"> Introduction Task Process Evaluation Conclusion Credits Teacher Page 	Conclusion
	
	Now that you've completed your first major keynote speech, it's time to move on to something bigger. First, reflect back on what you have learned. How did your feelings about cloning change? If you had to give this presentation again, what would you be different?
	If you really enjoyed researching cloning, perhaps there are other areas of science that you might like to study. Think about examining these areas:
	<ul style="list-style-type: none"> Stem cell research Human Genome Project Research ethics Genetic diseases and disorders
	If you are really interested, consider researching one of these areas and presenting your findings at another presentation.

Figure 6. Conclusion

Conclusion

Just as the WebQuest begins with an Introduction, it closes with a Conclusion. In the Conclusion, the teacher states what the student should have learned and accomplished and why this task was completed. A good Conclusion will also encourage the learner to reflect upon the task, including ways in which the process could have been completed more smoothly and new ideas the student learned during the course of the WebQuest (Dodge, 2005).

A second, although no less important, purpose of the Conclusion is to set the stage for future learning (Dodge, 2005), as shown in Figure 6 (Kossow, n.d.). Especially critical for gifted children and their high levels of interest, asking additional questions and encouraging students to continue exploring new areas of knowledge implies a value for the child's gifts and knowledge. Some teachers include links to new and expanded resources for students who have a particular interest in this content area to explore.

WebQuests and Gifted Students

When structuring a differentiated classroom, the advantages of using WebQuests are numerous. An obvious benefit is that WebQuests allow gifted students to take their project to tremendous intellectual and creative depths—depths that typical assignments and projects would never reach. And, because WebQuests can be tiered easily, a classroom teacher can build a WebQuest that all students will find engaging and worthwhile. In the cloning WebQuest (Kossow, n.d.), general education learners can follow the directions verbatim and develop a presentation that follows a standard school report. For those students more creatively or artistically gifted, presenters might dress up as a scientist, present with a foreign accent, or design creative visuals to enhance their presentation. Intellectually gifted students might develop technology-laden presentations complete with multimedia products catered specifically to their class. The possibilities for creative outlets in WebQuests are truly endless.

WebQuests allow for differentiation in more than just the area of content. Tomlinson (1999) wrote, “students differ in experience, readiness, interest, intelligences, language, culture, gender, and mode of learning (p. 24).” While it is folly to believe that a single WebQuest can differentiate for students in all these areas, WebQuests do allow students from different levels and areas of intelligence, different backgrounds, and different learning preferences to excel. These students do not always shine on traditional paper/pencil and project-oriented tasks, yet they might thrive on the authentic tasks that are a part of WebQuests. Furthermore, those gifted children who suffer from underachievement or disinterest in school might find their enthusiasm sparked by the new way of learning and the authentic way of applying their knowledge.

In the WebQuest model, the student becomes the expert while the teacher serves as a guide. Most traditional classrooms find the teacher dispensing knowledge in hopes that the student “learns” it. With WebQuests, as

with other higher level tasks, students use carefully selected Web resources to first master the content before addressing the higher level thinking skills required to complete the task. Furthermore, students learn to appreciate multiple facets of a topic and explore its many complexities. Waukesha, WI, teacher Jill Weidenbaum used WebQuests with her third-grade students to supplement a unit on weather (J. Weidenbaum, personal communication, January 17, 2006). "It was nice to have a project that provided students with activities appropriate to their learning level. My gifted and talented students took on the additional responsibility of leading their small group and working on the more demanding tasks of the WebQuest," said Weidenbaum. Surprisingly, however, instructional strategies like WebQuests also encourage *the teachers* to more closely analyze their craft. "Implementing differentiation has meant that teachers reflect on pedagogy, on the key skills and overarching concepts of the disciplines they teach, and on the qualities and challenges presented by the work given to students" (Page, 2000, p. 65).

WebQuests encourage students to see the relevance in the knowledge they gain from solving authentic problems. Many teachers hear students mutter, "When will we ever use this?" Using WebQuests, however, students take the same knowledge they might use for a short essay or presentation and synthesize it into a product that has real-world roots. For example, instead of asking students to complete a report on a country of their choice, this traditional project can be spun into something exciting and authentic, while keeping the foundational standards for such a project. Students learn critical life skills like public speaking, organization, and perspec-

tive that they might not gain writing an essay. They virtually visit their selected country and collect and analyze information otherwise unavailable to them when relying on static, traditional resources. Students learn to follow directions and work independently. Because students begin with a clear set of instructions in the Process, the onus for completing the task falls squarely on their shoulders.

Creating an interdisciplinary unit for gifted students has been considered a successful strategy for engaging talented students in challenging work. Considering the wide range of skills students utilize completing a WebQuest leaves no doubt to its multidisciplinary character. In addition, content areas such as science, math, language arts, and social studies easily can be linked together to create a truly integrated lesson in which gifted children can thrive. By linking WebQuests to content and process standards, teachers develop a powerful tool for tackling a wide range of objectives in a single project. In Jill Weidenbaum's weather WebQuest, she designed a task that "not only fit our science standards, but covered all academic subjects, as well" (personal communication, January 17, 2006). Aside from the science standards, students developed skills in standards related to using multiple forms of technology (like computers, video equipment, and software), writing persuasive pieces, and public speaking. In particular, Weidenbaum's gifted students, who learned the content quickly, oversaw the design of public service announcements based on their new knowledge, creating a product unique from their peers.

More importantly WebQuests are fun—for gifted students *and* teachers. "I was impressed by their enthusiasm and drive to make the project

a success and it was great to see their enthusiasm rub off on their classmates," said Weidenbaum (personal communication, January 17, 2006). One teacher at a recent state gifted conference suggested that designing WebQuests were enjoyable because they broke up the standard classroom routine and challenged him to move out of his comfort zone to be a better teacher. Gifted students in particular find enjoyment from the variety and challenge of tasks and explore content areas not usually covered. When published by the teacher on the Internet, students enjoy sharing their upcoming project with parents and family members. Somehow, having a student's project on the Internet lends an air of significance to the project as students enjoy the deep sense of accomplishment that comes with completing these practical, authentic tasks.

Using, Creating, and Publishing WebQuests

Because the task of creating a WebQuest from scratch can be daunting, many teachers begin their WebQuest experiences by using an existing WebQuest from the Internet. Besides using standard search engines, teachers can use a comprehensive WebQuest search page such as the one hosted by Bernie Dodge (<http://www.webquest.org>) that features more than 1,500 WebQuests. Interested teachers can search by text, grade level, or curriculum in Dodge's WebQuest matrix. For example, upper elementary teachers interested in social studies WebQuests can submit broad searches for WebQuests in that content area and receive nearly 300 WebQuests from which to choose. When searching for

WebQuests on the Internet, teachers can take advantage of reading the reviews of other teachers who have used them.

Not every WebQuest found on the Internet will fit the particular needs of the students in your classroom, so another avenue for WebQuest creation is to modify an existing WebQuest. Creating a hybrid is a quick way to use the existing foundation of a WebQuest to produce one designed for your classroom. Of course, it is common Internet courtesy to e-mail the author of any WebQuest you use or modify to let them know your intentions, experiences with their WebQuest, and suggestions you might have for improving their work (March, 2000).

The best way, however, to learn about and use WebQuests is to write one. Using the critical components as a framework, go to Web sites such as QuestGarden (<http://webquest.org/questgarden>) to create your own or encourage the students in your class to create ones for each other. Prior to starting, it is helpful to examine other WebQuests first to see what other teachers or students have used successfully. Good WebQuests often require periods of revision to ensure that directions are clear and concise, hyperlinks are adequate for the task, and scoring guides are effective at grading the project.

There are also many avenues for publishing WebQuests. Although most WebQuests are published on the Internet, there are many avenues for publishing them, including a Word document, PowerPoint presentation, or an HTML document hosted on an intranet. A WebQuest does not need to appear on the Internet, but just make use of the Internet. For teachers interested in making their WebQuest available on the Internet, there are several options. Some teach-

ers choose to design their own Web sites and host them on a personal or school server. Others use any of a number of Web resources currently available. One of the best such resources is QuestGarden, also hosted by Bernie Dodge. This site, launched in September 2005, allows teachers to create WebQuests and publish them to the Internet. Teachers use templates designed by Dodge, and are assisted through the use of prompts that guide the development of a quality WebQuest. Teachers can alter the appearance of the Web pages, as well as add pictures and other documents. Other resources for WebQuest creation include Instant Projects (<http://www.instantprojects.org/webquest>) and Filamentality (<http://www.filamentality.com>).

Teachers of gifted students should join this community and take advantage of the diverse opportunities WebQuests provide for their students—opportunities to express creativity, to use higher level thinking skills in an authentic way, and to more easily enjoy the benefits of differentiated curriculum. Although these characteristics benefit all students, they are uniquely catered to the special skills of gifted students. Gifted students can take mundane tasks and make them interesting, or exciting, authentic activities like those found in WebQuests and make them exhilarating. Furthermore, gifted students require more opportunities to enhance their higher level thinking skills through challenging, meaningful activities that are integrated into the regular curriculum. WebQuests help to create a fun and enjoyable learning experience for both students and teachers while challenging gifted students to fully utilize their talents.

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